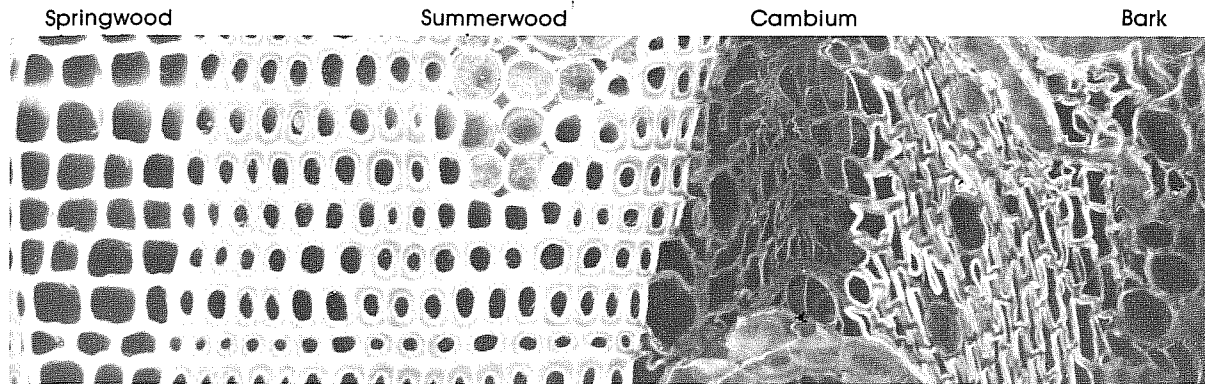


**Fig. 50-6.** Springwood cells are larger than summerwood cells. Springwood cells also form larger bands.

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phloem cells die, they are forced outward. They then become the tree's new bark. Bark must be produced constantly to protect the tree's outward growth.

## Tree Growth

Xylem cells produced during peak growing seasons are large. The wood made from this growth is called **springwood**. Cells produced during less favorable conditions are smaller, with thicker walls. Wood made from this growth is called **summerwood**. See Fig. 50-6. Because summerwood is denser than springwood, summerwood usually appears darker.

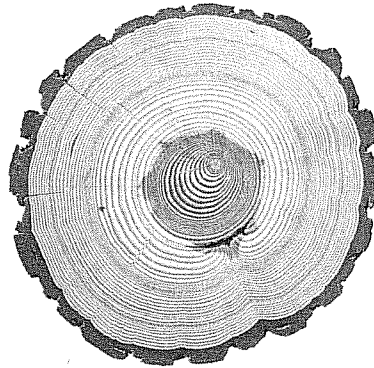
The different growth rates produce a series of rings called **annual rings**. See Fig. 50-7. The age of a tree can be determined by counting these rings. Forest managers do this by cutting a small plug. See Fig. 50-8. The plug is taken from the center of the tree. Then the growth rings on the plug are counted. The hole from which the plug came is treated to prevent disease.

Physical conditions greatly affect the growth of xylem cells. The widths of the annual rings can vary from year to year. Even two points in the same ring can vary in width.

Different kinds of trees also grow at different rates. Trees that grow very rapidly generally have widely spaced annual rings. Slow-growing trees have narrow rings.

**Fig. 50-7.** The age of a tree stump can be determined by counting the number of annual rings. This pine tree is 62 years old.

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**Fig. 50-8.** This forester is taking a plug from a tree to determine the tree's age.

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